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INFORMATION REPORT

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SUBJECT : [redacted] Work at Leuna [redacted] 25X1

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SUPPLEMENT TO REPORT NO.

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[redacted]

Introduction

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25X1 This report covers [redacted] the following topics:

1. Organization of Leuna
2. Production of Nitrogen and Oxygen
3. Production of Argon
4. Production of Brown Oxide Catalyst
5. Hydrogen Purification Plant
6. Production of Black Oxide Catalyst
7. Ammonia Plant
8. Production of Ammonium Sulfate
9. Production of Nitric Acid
10. Production of Methanol
11. Production of Ethanol
12. Production of Higher Alcohols
13. Production of Trimethylol Propane
14. Production of Perlon and Nylon
15. Production of SS-Oil
16. Production of Lupolene
17. Production of Pharmaceuticals and Antibiotics
18. Research Projects at Leuna
19. Bottlenecks at Leuna

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FORM NO. 51-4F OCT 1951

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1. Organization of Leuna

a. Production at Leuna is classified under a number of divisions, as follows:

(1) Low Pressure Division - formation of mixed hydrogen and carbon dioxide by water-gas shift reaction.

(2) High Pressure Division - compression of mixed hydrogen and carbon dioxide, removal of carbon dioxide, purification of hydrogen, production of nitrogen, oxygen, and argon, production of ammonia.

(3) Salt Division - production of fertilizers such as ammonium sulfate (formerly, production of nitric acid, fuming nitric, and calcium nitrate).

(4) Hydrogenation Division - hydrogenation of coal and tar.

(5) Organic Division - production of methanol - isobutyl oil, production of methyl amine, and catalyst plant in the north; production of lactam, urea, lacquer, mersolate, and catalyst plant in the south.

(6) Workshop Division - repair and maintenance

In addition to these divisions, there are separate units for purchasing, plant control, and the central research laboratory.

b. It should be emphasized that process research is usually conducted at the plant in the division concerned, rather than in the central research laboratory where emphasis is on fundamental research up to pilot plant stage.

2. Production of Nitrogen and Oxygen

a. Nitrogen and oxygen are produced at Leuna in Linde equipment. The oxygen is 98%-98.5% pure and must contain no more than 0.1% acetylene for safety against explosion. The quota of fixed nitrogen production at Leuna was set for the year 1951 at 225,000 tons, or 700 tons per day. This quota is to be raised for the year 1952 to 265,000 tons, or 725 tons per day. By the end of the five-year plan it is to reach 310,000 tons, or 850 tons per day.

b. Actual figures for the first six months of 1951 for percentage conversion of synthesis gas to ammonia, and resulting production of fixed nitrogen in tons per day, are as follows:

1951	% Conversion	Metric Tons Fixed Nitrogen per Day
January	91.6	717
February	92.2	725
March	92.6	735
April	93.1	725
May	93.8	735
June	92.7	718

c. The quota for the third quarter of 1951 was set at 715 tons per day, while the last quarter was to provide 725 tons per day. (The fulfillment of the quota depends entirely on the amount of synthesis gas, which depends on the gas compressors that have always been the bottleneck of Leuna production.)

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d. It would seem that the quota of the five-year plan cannot be met without new or additional machinery. Leuna has already salvaged all possible old equipment, and new equipment cannot be raised in the Soviet Zone of Germany. It was announced that three ovens, each 800 mm in diameter and 12 meters high, were stored in the West Zone ready for shipment, but under present circumstances it is unlikely they will be delivered.

3. Production of Argon

a. Argon is not available in the East Zone of Germany. It is needed for welding copper and perhaps aluminum and other metals which require an inert atmosphere. It prevents oxidation and the formation of metallic nitrides during the welding process. A professor at Halle is using argon for welding experiments.

b. A project for argon manufacture is now under way at Leuna. The off gases from ammonia synthesis contain a 30% mixture of argon and methane, and a 70% mixture of hydrogen and nitrogen. By compressing these off gases to 330 atm, and reacting to give additional ammonia, the argon-methane fraction is increased to about 40%-45% of the residual gas. Leuna proposes to separate the argon by treating the gas with liquid ammonia and/or by liquifying the gas in the oxygen plant and fractionally distilling.

c. The argon separation project is in the research laboratory of Leuna Bldg ME 14 and is under Dr Bankovski. Dr Gross, chief of the ammonia plant, and Dr Funke, chief of the Linde oxygen plant, are collaborating with Dr Bankovski who has assured me Leuna will produce argon on a full scale within 1½ years.

4. Production of Brown Oxide Catalyst

a. Brown oxide water-gas shift-reaction catalyst, now being made at Leuna, contains about 90% ferric oxide, 6% chromium sesqui-oxide, and 4% water and other impurities. The method of production is as follows /See Enclosure (A)/:

(1) This catalyst is used to convert carbon monoxide in water-gas to carbon dioxide and hydrogen by reaction with steam, thereby increasing the hydrogen concentration. The carbon dioxide can be removed by absorption in water at 20°C under a pressure of 25 atm. 25X1 [redacted] : Topic as - Report on Water-Gas Shift Reaction under Pressure using Fixed and Fluidized Beds./

(2) This catalyst was formerly bought from Oppau.

5. Hydrogen Purification Plant

a. At Leuna, the capacity of the hydrogen purification plant is calculated on the basis of equivalent synthesis gas which contains three mols of hydrogen per mol of nitrogen, or 75% hydrogen by volume. On this basis the production of the hydrogen purification plant is 110,000-120,000 normal cubic meters of synthesis gas per hour. Although the capacity of the washers is about 150,000 cubic meters per hour, the capacity of the plant is limited to 130,000 cubic meters per hour, which is the capacity of the copper solution regenerator, the present bottleneck in production. Conversion of synthesis gas to ammonia runs slightly better than 92%, which is equivalent to about 720 tons of fixed nitrogen per day.

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b. During the month of June 1951, the total cost of running the hydrogen purification plant was 470,900 East Zone German Marks, of which 112,000 were rental to the Soviets. About 30% of the total cost went into salaries and wages. It presently takes about 16 East Zone German Marks to buy one US Dollar, as contrasted to 4.19 of the West Zone German Marks.

c. Dipl Ing Eule is the present chief of the hydrogen purification plant. Method of production is as follows [see Enclosure (B)]:

(1) Unpurified hydrogen containing 1%-2% carbon monoxide and small amounts of oxygen, hydrogen sulfide, and carbon dioxide is washed to remove carbon monoxide, oxygen, hydrogen sulfide, and some of the carbon dioxide in high-pressure copper-solution washers (1) operating at room temperature and a pressure of about 230 atm. The exit gas is analyzed for carbon monoxide content by a continuously recording "ultra red analysis scriber", "Uras".

(2) The carbon dioxide in the exit gas is removed in a high-pressure ammonia-solution washer (2) operating at room temperature and a pressure of about 230 atm. The entering solution, containing about 25% ammonia, is recycled by the ammonia solution pressure pumps (6), and the ammonium carbonate solution formed is withdrawn and piped to the ammonium sulfate production plant. The pure hydrogen, containing less than 0.01% carbon monoxide, is piped to the ammonia plant.

(3) The hydrogen purification plant for the hydrogen used in ammonia synthesis is housed in Leuna Bldg ME 106. (I might add that the hydrogen used for hydrogenation of petroleum residual fractions is purified in a separate Leuna Bldg, ME 333.) The copper solution washers are mounted in a row outside and alongside ME 106 with their corresponding control panels inside the building. These washers are all constructed from a low chromium steel, about 2% chromium, since ordinary carbon steel would be decarburized by the hydrogen.

(4) The washers are all 12 meters high, but of two diameters. There are about 18 "normal washers", 500 mm in diameter having a capacity of 4000-5000 cubic meters of synthesis gas per hour, and about 5 of the "800-washers", 800 mm in diameter, having a capacity of 10,000-12,000 cubic meters of synthesis gas per hour. Total capacity is equivalent to 26 "normal washers". Each washer is packed with three layers of sheet iron raschig rings which are 45 mm, 60 mm, and 100 mm in diameter, with the largest forming the bottom layer.

(5) The copper solution is regenerated at a rate of 40,000 cubic meters per hour in the following manner: After passing through circulating pump (3) it is reduced from 230 atm to normal pressure in expansion machine (4). There are four of these machines, each having two cylinders of 700 and 800 mm diameter respectively, made of carbon steel. The solution then passes to surge tank (7) and on to vacuum vessel (8) and decomposition vessel (9), before entering intermediate vessel (10). These three vessels are all of carbon steel and each has a volume of 24 cubic meters. Decomposition vessel (9) is steam heated and operates at 40°C. Intermediate vessel (10) is connected to a holding tank (11) of 80 cubic meters capacity. Regenerated copper solution, containing 0.12 mols cuprous and 1.2 mols cupric copper per 100 ccm, is cooled to room temperature in heat exchanger (12) and is recompressed to 230 atm by the use of expansion machine (4) plus booster pump (5). There are six booster pumps in the plant.

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(6) The carbon monoxide rich gas removed from vessels (8), (9), and (10) by means of vacuum pumps (13) is washed with ammonia solution in washer (14) and piped to the water-gas shift-reactor.

d. It has been observed that the copper solution foams whenever the sulfur content of the unpurified hydrogen gas runs higher than usual. It may be that organic sulfur compounds are responsible for the lowered surface tension and flotation effects.

e. The copper from waste copper solution is recovered at the Mansfelder Copper Refinery in the Harz mountains.

f. The capacity of the copper-solution washer system is presently being increased by installing an ammonia refrigerant cooling system for cooling the fresh copper solution to 15°C. Although solubility increases, rate of absorption decreases as the temperature is lowered. A temperature of 15°C is optimum for maximum solubility compatible with maximum rate of absorption. The cooling installation, when completed in 1952-53, should increase present production to 130,000 cubic meters of synthesis gas per hour, which is the goal of the 5-year plan.

6. <u>Production of Black Oxide Catalyst</u>

a. Black oxide catalyst for ammonia synthesis is made at Leuna and is mainly iron oxide with 2% alumina, 2% calcium oxide, and 0.5% potassium oxide. High purity Swedish charcoal iron is used in its preparation. The iron oxide is in magnetite form, Fe_3O_4 but is reduced to iron during the ammonia synthesis. Oxygen is used to regenerate the black oxide catalyst.

7. <u>Ammonia Plant</u>

a. The ammonia plant produces about 720 tons of fixed nitrogen per day. The average volume composition of the fresh synthesis gas is 74% hydrogen, 23% nitrogen, 2% methane, 1% argon, and 0.01-0.02% carbon monoxide. The methane content often runs higher. Dr <u>Gross</u> is in charge of the plant.

b. The method of production is as follows [see Enclosure (C)]:

(1) The last traces of carbon monoxide are removed in the preliminary contact reactors (1) which operate a 180-200°C and 220-235 atm. There are 3 of these units, each 1200 mm diameter and 12,000 mm high, constructed of low chromium steel, 2% Cr. Each reactor contains about 18 metric tons of black oxide catalyst which is replaced every six months. The capacity of each unit is about 40,000 cubic meters synthesis gas per hour.

(2) Since these units operate at 180-200°C and have no facilities for preheating the synthesis gas to 400-500°C, which is required in order to reduce the black oxide catalyst in situ, the catalyst must be already in the reduced form before being charged. For this purpose there is a single unit, 7000 mm diameter and 12000 mm high, made of low chromium steel, for reducing the catalyst under pressure. It produces about 700kg of reduced catalyst per week, and constitutes a bottleneck in production. To overcome this difficulty it is planned to install a separate reduction unit which will work at normal pressure. Installation may be finished by autumn of 1952, ~~at which time~~ the present pressure unit will be used as a producing reactor.

(3) The purified synthesis gas joins the ammonia gas stream entering into the ammonia contact reactors (2) which operate at $420-500^{\circ}C$ and about 230 atm. There are 25 of these units, each 3000 mm diameter and 12,000 mm high, constructed of low chromium steel. Each unit is equipped with a heat exchanger and an electrical heater for preheating the synthesis gas to $400-500^{\circ}C$. The heat exchanger consists of 1260 tubes, 6-11 mm diameter and 2500 mm high. The electrical heater has a capacity of 305 KVA. The catalyst container consists of 78 tubes, 67-72 mm diameter and 8800 mm high. These tubes contain 6 tons of catalyst which is active for 20-24 months. The capacity of each unit is 25-35 metric tons ammonia per day.

(4) These reactors are started up with an initial flow rate of 5000 cubic meters per hour, which is increased over the course of several days to 40,000-50,000 cubic meters per hour. As the catalyst activity decreases the rate must be reduced to maintain reaction temperature. When the rate falls to 20,000 cubic meters per hour the reactor is stopped, and the catalyst replaced.

(5) The ammonia gas stream leaving each reactor, at about $410^{\circ}C$, passes through a heat exchanger (3) whose shell is 5000 mm diameter and 12,000 mm high. There are 25 units of two types; one with 511 tubes, 6-11 mm diameter and 10,850 mm high; the other with 151 tubes, 14-23 mm diameter and 10,850 mm high. The gas leaves these exchangers at about $100^{\circ}C$.

(6) The gas then enters water coolers (4), and ammonia refrigerant coolers (5) of which there is 1 unit of each for each reactor. The ammonia refrigerant cooler is 595 mm diameter and 8000 mm high. Its heat exchanger contains 421 tubes, 6-13 mm in diameter. The ammonia vaporized from the liquid ammonia refrigerant is sent from vessel (6) to the injector unit.

(7) The cooled mixture of ammonia liquid and vapor passes to the high pressure vessel (7) where the liquid ammonia is removed and its pressure reduced in vessel (9) from which the liquid ammonia goes to storage, and the flash vapor is sent to the pressure absorption unit. About 225-275 metric tons of liquid ammonia are produced per day.

(8) The vapor from high pressure vessel (7) is recycled to the reactors by circulating pump (8), with bleed-off going to the pressure absorption unit. There are 9 circulating pumps; 8 steam driven and 1 electrically driven.

(9) The off gases from the recycle line leaving (7) and the ammonia gas flash from the pressure reducing vessel (9) are absorbed in steam condensate in a pressure absorption unit, operating at 16 atm, to produce 1.5% ammonia solution.

(10) This solution is sent to the recycle line of the injector unit (10) where ammonia gas from (6) is absorbed to produce a 26% ammonia solution. There are 6 injector units, 1 of the smaller type, 400 mm diameter and 1295 mm high, and 5 of the larger type, 550 mm diameter and 1840 mm high. Each injector unit consumes about 5000-10,000 cubic meters ammonia gas per hour and produces 200-400 cubic meters of 26% ammonia solution per hour.

(11) Due to the heat of solution each injector unit is equipped with 2 water coolers (11) which reduce the solution temperature from 32-35°C to 23-26°C. Each cooler is 1800 mm in diameter and 4000 mm long, and contains 2012 cooling tubes of 21-26 mm diameter. Water consumption is about 200 cubic meters per hour per cooler.

(12) The 26% ammonia solution withdrawn from separator (12) is sent to storage for use in ammonium sulfate production.

(13) The off gases from ammonia synthesis contain a 30% mixture of argon and methane (roughly half and half), and a 70% mixture of hydrogen and nitrogen. By compressing these gases to 330 atm to increase the partial pressures of hydrogen and nitrogen to ammonia synthesis level, and reacting at this pressure additional ammonia is produced, and the argon-methane fraction is increased to about 40-45% of the residual gas. One unit, 5000 mm diameter and 12,000 mm high, has been in operation since August 1951 for this "after synthesis". It is successfully producing about 6 metric tons ammonia per day. More of these units will be installed as soon as equipment is available.

8. <u>Production of Ammonium Sulfate</u>

a. The production of ammonium sulfate amounts to about 1800 metric tons per day. Sulfuric acid is not produced at Leuna but is shipped to Leuna either from Bitterfeld or from Wolfen.

9. <u>Production of Nitric Acid</u>

a. About 40% of the fixed nitrogen is shipped as liquid ammonia to Bitterfeld where it is oxidized over iron oxide, tungsten catalyst to form nitric acid.

b. It is well known, of course, that nitric acid can be used for the production of explosives, and for that reason Dr Gross, of the ammonia plant at Leuna, was asked to make a radio speech emphasizing that all fixed nitrogen be used exclusively for the production of fertilizers and mining explosives. Dr Gross refused to make the speech.

10. <u>Production of Methanol</u>

a. Methanol is produced at Leuna from carbon monoxide and hydrogen. The higher alcohol fraction obtained in its manufacture contains about 50% methyl alcohol, 11% isobutanol, and 40% eight-nine carbon alcohols, mainly of the alpha-methyl type. This fraction is reduced by "after-hydrogenation", in the presence of Leuna standard catalyst No 1930, containing 1.5 mol copper, 0.5 mol chromium sesqui-oxide, and 1 mol zinc oxide. Leuna produces about 39 metric tons per month of this catalyst. The "after hydrogenation" reduces the aldehydes and unsaturates, and improves the color and odor of the final products.

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b. [redacted] the Soviets [redacted] have a projected plan for the production of methanol-isobutyl oil, probably at Severo-Donetsk. The methanol plant has surpassed its quota for the year 1951 by 130%. In the plant four 500 mm methanol ovens and two 500 mm isobutyl ovens are in operation.

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11. **Production of Ethanol**

a. Ethanol is also produced at Leuna from carbon monoxide and hydrogen, but the conversion is only about 15%.

b. The Soviets make ethanol by the Libiedev method at the factories of Jelets and Veronesh, south of Moscow. Jelets ships to Baladina where the alcohol goes into the production of Buna rubber. In addition, the Soviets make large amounts of ethyl alcohol by the fermentation of potatoes.

25X1 [redacted] no production of butyl alcohol and acetone by fermentation in the USSR.

12. **Production of Higher Alcohols**

a. (This topic has been covered under 10. Production of Methanol.)

13. **Production of Trimethylol Propane**

a. Trimethylol propane is being made in the Organic Lab at Leuna, Süd by Dr Probloth. It is made by reacting two molecules of formaldehyde with one molecule of butyraldehyde and reducing. The trimethylol propane is used for reacting with dibasic acids to give alkyd resins. It may be used as a substitute for glycerin in this production. At Leuna, adipic acid is reacted with trimethylol propane to give the alkyd resin alkadyl.

14. **Production of Perlon and Nylon**

a. Leuna makes about 100 metric tons per month of caprolactam which is polymerized and then shipped as flakes to Schwarza, Thuringia, for spinning and weaving into perlon fabric. Drs Deiters and Schaeffler are in charge of this work.

15. **Production of SS-Oil**

a. This synthetic lubricating oil is made from polyethylene oils by a batch process in a small pilot plant at Leuna under the supervision of Dr Leguttke. 25X1 [redacted] the catalyst used is boron triflouride. The SS-Oil is very stable and is used for lubricating hot bearings and cylinders. It is also called "hot steam oil".

16. **Production of Lupolene**

a. Lupolene N (normal) is polyethylene of 2000-3000 monomers per chain, while Lupolene H (high) is polyethylene containing about 10,000 monomers per chain. These waxes are made at Leuna by compressing ethylene with a trace of oxygen gas as catalyst, to a pressure of 1000-2000 atm. A slight excess of oxygen will produce an explosion in this process.

17. **Production of Pharmaceuticals and Antibiotics**

a. Leuna produces para-amino-salicylic acid, known as PASS (para-amino-salicyl-sauer) in Germany and as PASK (para-amino-salicyl-kislota) in Russia. It is a relatively new drug which when used with penicillin is effective against tuberculosis.

b. Before 1946 no penicillin could be purchased in Moscow. During that year three US plants for penicillin were erected in Moscow.

By 1947 penicillin of US quality was available in drug stores there. By 1950 the supply was plentiful, and the cost of 300,000 units was only about three-four rubles.

18. Research Projects at Leuna

a. The period [redacted] was actually too short for detailed observation on present research at Leuna. [redacted]

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(1) A cooling installation for the copper solution washers is being erected in the hydrogen purification plant in order to increase their capacity. Actually it is not the copper solution washers, but the copper solution regenerators which comprise the bottleneck to production, and the regenerators are already running at almost full capacity. Dipl Ing Eule, chief of the hydrogen purification plant, is not interested in research [redacted]

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(2) An after-synthesis regenerator is already operating successfully on one half of the off gas from one of the 25 ammonia synthesis reactors, producing additional ammonia and a richer argon-methane fraction.

(3) Dr Bankovski of the Research Laboratory, Dr Gross, chief of the ammonia plant, and Dr Funke, chief of the oxygen plant, are working on a project for the production of argon.

(4) Dr Walter Gross of the ammonia plant is working on a de-rusting agent and a rust-proof base for coating metals before varnishing. It contains phosphoric acid, graphite, and fine iron oxide from used ammonia synthesis catalyst.

(5) Dr Gustav Achilles Krajewski from the Salt Division is doing research on fertilizers.

(6) Dr Otto Bankovski, chief, Dr Koethnig, and Dipl Ing Adolphi of the Research Laboratory are engaged in basic research on fluidized beds.

(7) Dr Pobloth of the Organic Department South is doing research on problems retarding the present production of trimethylol propane from butyraldehyde and formaldehyde.

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(8) Drs Elm and Scheuer are working on a project for the production of acetylene. [redacted]

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Elm and Scheuer were still busy establishing their own laboratory, south of Leuna Bldg ME 24. The Soviets seem very interested in this project.

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(9) In Leuna Bldg ME 15, the Main Work Shop, [redacted] a large bundle of high pressure tubes, used as pre-heating tubes in the hydrogenation plant. These tubes were 120 mm in diameter about 10 meters long, and were made of alloyed steel. They were to be welded into hairpins with butt-welding machines.

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(10) In the same building [redacted] 4-5 large vertical lathes were being used exclusively for Soviet special orders. [redacted] the orders were for propellor shafts for ships. One of these shafts had

a diameter of about 15 cm. The orders are received directly from the Soviets, and the workers are paid high bonuses if they finish the work within the deadline. Therefore these orders are in high favor with the workers.

19. Bottlenecks at Leuna

a. Bottlenecks, specific to the production of a given product, have already been presented. More general items follow:

(1) Compressors constitute the most serious bottleneck at Leuna. All departments depend on the compressors, most of which are 1917 models, and in constant need of repair. In October 1951 the production of Leuna was endangered because one of the compressors in the hydrogenation plant, Leuna Bldg ME 165, needed a new cylinder head, and it was impossible to get a replacement in the Soviet Zone or in any of the satellite countries. Finally the Leuna workshop succeeded in making one just before the danger became critical) The ammonia plant had to work overtime in order to make up the loss of production and fulfill the quota.

(2) Materials for high pressure installations comprise another serious bottleneck. High pressure tubes of 6-10 mm diameter are very scarce, and high pressure jackets for the 500 and 800 mm reactors are practically unobtainable.

(3) Steel tubes for steam and cooling units are produced at Riesa, but are practically worthless because they do not have the correct measurements, or are of a faulty material, or badly welded. In the ammonia plant the last tubes for cooling units were built into a broken cooling unit in October 1951. Since that time the ammonia plant has been without reserve in this item.

(4) Sheet iron is very scarce, and whatever is shipped to Leuna is of poor quality. The sheets are rolled at Riesa. They are non-uniform in thickness and frequently cannot be used.

(5) Cables for conveying coal to the gas plant are in short supply and almost caused a breakdown of all Leuna production in September 1951 when the plant needed a 1500 meter length, which was procured only in the last moment.

(6) The oxygen and air blowers of the Winkler generators are operating without a reserve. There are five such generators at Leuna, of which four were derusted and remodeled during the summer of 1951. In October 1951 generator No 4 was still out of operation while the four others were running day and night. Each of the generators has a capacity of 60,000 cubic meters of gas per hour, and consumes 750 tons of raw soft coal per day.

(7) Asbestos insulating string for the electric heaters for the ammonia ovens is very scarce, and almost caused a shutdown of the ammonia plant in Oct-Nov 1951.

(8) The reserves of sulphuric acid are kept dangerously low. There had been a rule at Leuna that 1200 tons should always be in reserve. However, in a conference of the production chiefs of 5 Oct 51 it was mentioned that only 500 tons were available at Leuna, and that the SAG at Weissensee insisted that this amount be further cut to 300 tons, which constitute about half a month's consumption.

(9) Another critical shortage at Leuna is that of trained personnel, particularly those with academic training. The research laboratory, for instance, which formerly employed a staff of 25 academically trained scientists, is now down to six. The same is true for the production departments. The ammonia plant, for instance, has only one chemist left, the chief of the plant, Dr Walter Gross. The hydrogen purification plant has no chemist on its staff; the chief, Dr Eule, is an engineer.

(10) Not only is the number of professional personnel small and in many cases insufficient, but the average age is very high. There are few scientists left at Leuna younger than 55 or 60 years of age. The same is true for the trained non-academic personnel. Women form about one third of the entire Leuna personnel. It is the policy of Leuna, under the direction of the SED, to hire women almost exclusively, for two reasons:

(a) The Soviet administration wants to force women into the production process. This is done by refusing families such social benefits as use of kindergartens, hospitals, etc., unless the woman and the man are both working.

(b) The salaries are in the long run lower for women than for men, as demonstrated from the hourly wages at Leuna, which by the new collective contract are:

0.78 DM	for unskilled workers	
0.88 DM	" "	after a probation period of three months
1.02 DM	" "	after two years in the same production plant
1.22 DM)		(according to the joint
1.32 DM)		(recommendation of the
1.38 DM)	------------------------	(union chief of the plant,
1.48 DM)		(the foreman, and the plant
1.58 DM)		(chief

Since in general women change jobs more often than men, the women stay in the lower salary brackets, and this saves money for the plant.

(11) As substitutes for the professionally trained personnel, the SED at Leuna and the union are slowly introducing into the plant a new type of employee called the "plant assistant" (Betriebsassistent). These plant assistants are members of the FDJ (Freie Deutsche Jugend), and operate somewhat as Communist supervisors, but at the same time are trained to learn the operations of the individual plants. So far, I know of two such plant assistants, one of whom is in the Economic and Production Control Department (Allgemeine Wirtschaftlichkeitsprüfung) as an "assistant" for Dr Klockmann. The two plant assistants were present at the last two general production conferences, at which only the production leaders are normally present.

(12) The plant assistants are becoming a general institution in the Soviet Zone. It is hoped that they will work their way into the various plants to be able later to direct the

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operations of the plants. They repeat, at Leuna, a trend 25X1 [redacted] in USSR toward specialization without any broad knowledge or understanding of the productions and methods, and without any academic training in science.

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Enclosures: (A) Production of Brown Oxide Catalyst

(B) Hydrogen (or Synthesis Gas) Purification Plant

(C) Ammonia Plant, Leuna

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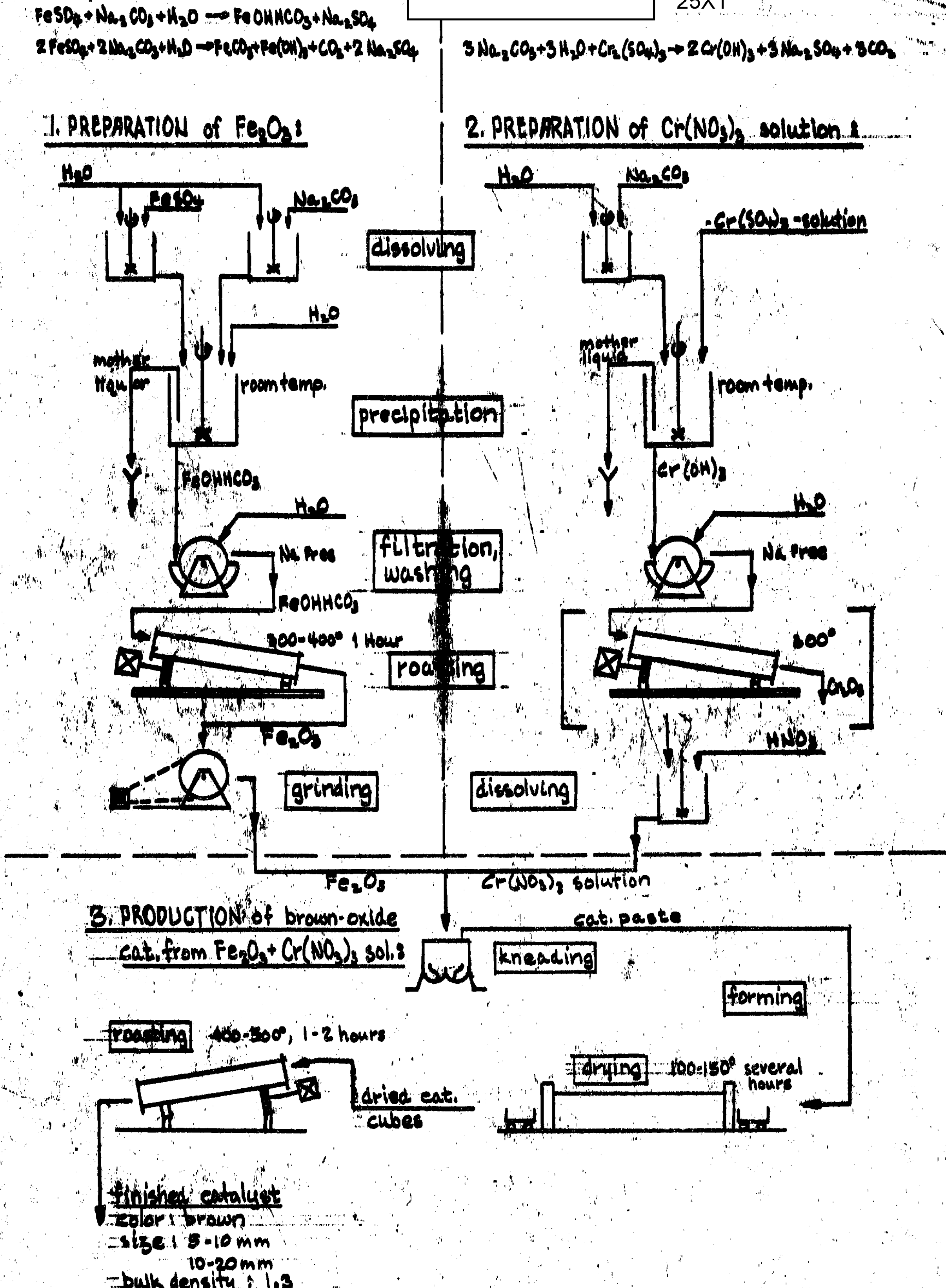

PRODUCTION of BROWN OXIDE CATALYST

ENCLOSURE (A)

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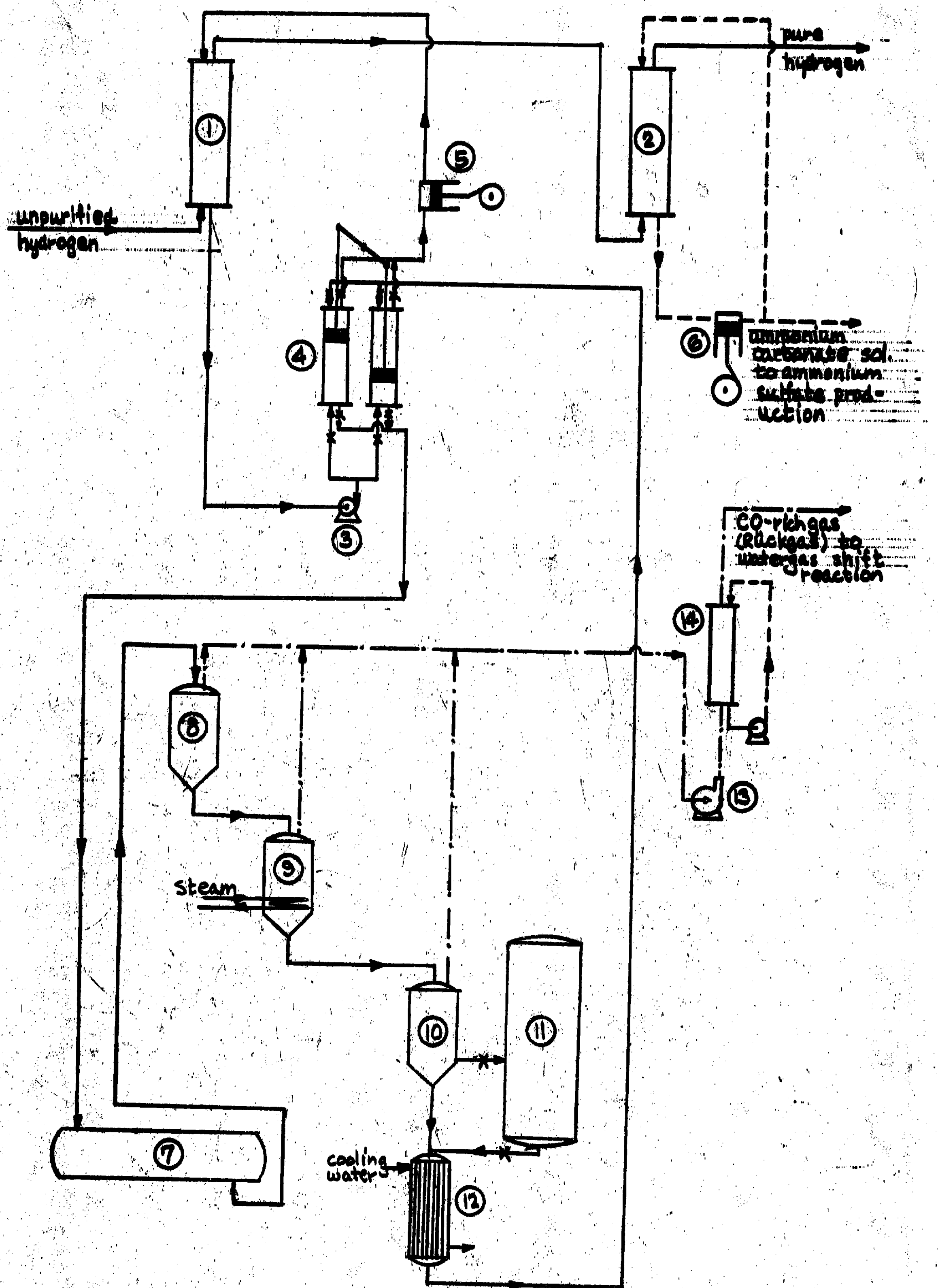

HYDROGEN (or SYNTHESIS GAS) PURIFICATION PLANT

Wasserstoff-Wäsche

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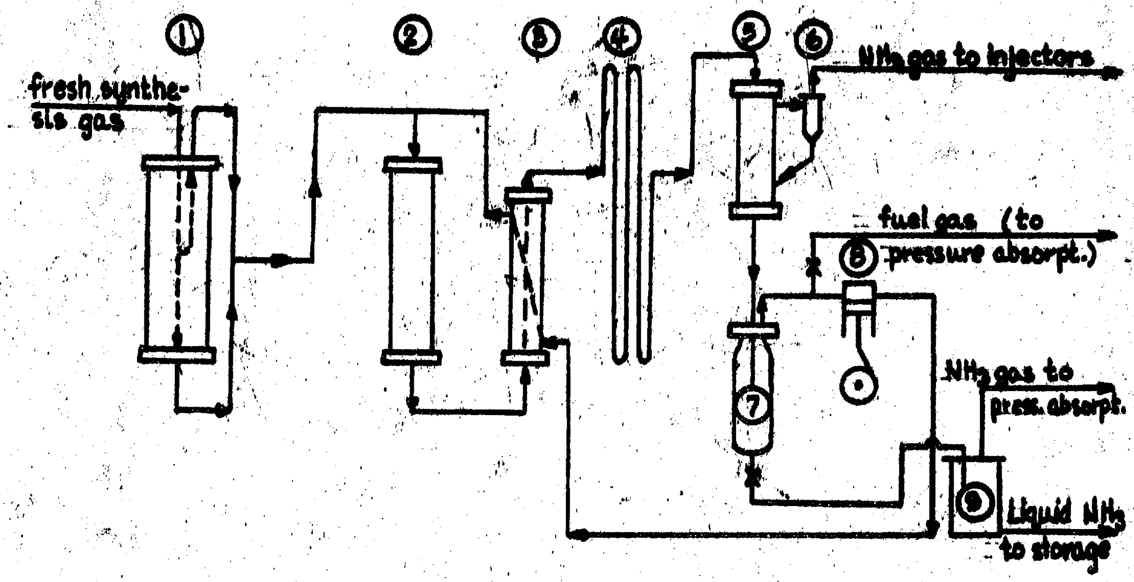
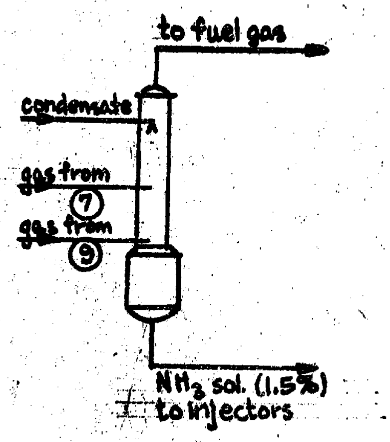
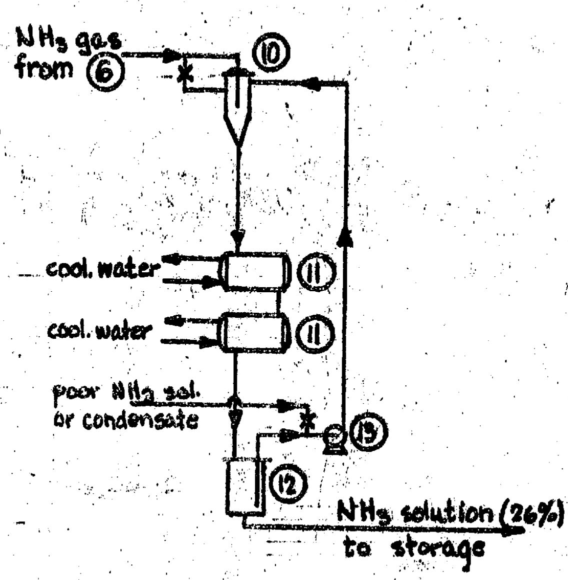
ENCLOSURE (B)







PRESSURE ABSORPTION UNIT

INJECTOR UNIT

AMMONIA PLANT LEUNA

ENCLOSURE (c)

REPORT NO EG-95

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